examination, both microscopic and chemical, of the nests used for soup at the Health Exhibition of 1884. Since then I have had, by the kindness of Mr. W. T. Thiselton Dyer, Director of the Royal Gardens, Kew, the opportunity of examining various specimens of the nests, obtained from other places than the first-named, and differing from one another in quality.

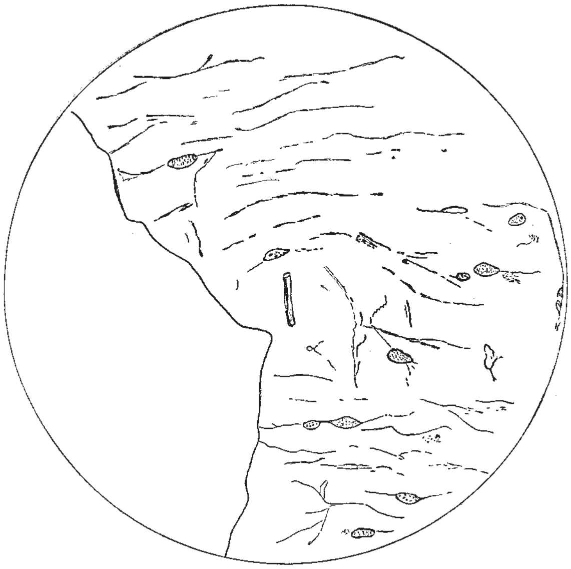

Fig. 2

Borneo nest. No alga present (mag. 200 diam).

The results of my experiments on these nests do not modify in any essential particular those which I had obtained before from the first ones examined. After prolonged soaking all alike became gelatinous in texture, and then were easily seen to be made up of laminæ affixed by their faces to each other. Whether the observation was made by teasing with needles or by cutting sections, this laminated structure was very evident. Fig. 1 is a section of a nest from Celebes, enlarged about 50 diameters. The laminæ are fairly regular in disposition, and show no trace of any vegetable structure between them or in their substance. Here and there may be noted small granular bodies resembling epithelium cells. These are seen more distinctly in Fig. 2, which is a section of a nest of inferior quality from Borneo enlarged 200 diameters.

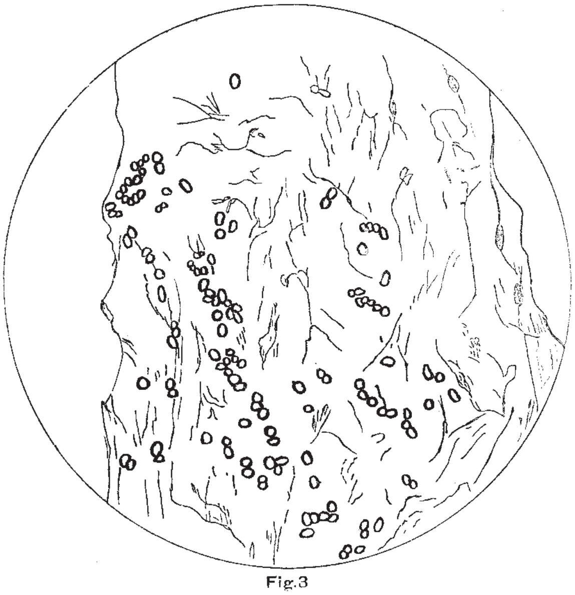

Fig. 3

Celebes nest. Alga present (mag. 200 diam.).

Another nest, also from Celebes, but marked as being of inferior quality showed the presence of algæ. A section of this, taken from the part where the greatest quantity was found, is shown at Fig. 3, the enlargement being again 200 diameters. The presence of the alga in this inferior nest seems at first to bear out Mr. Layard's suggestion, but an examination of the mode in which it is disposed in the nest-substance does not confirm his view of its being here even an agglutination of algæ because the supply of saliva had failed. The alga-cells, though fairly numerous, are not in large quantity when compared with the amount of nest-substance, nor are they regularly placed in layers as would be the case if agglutinated as suggested. Their somewhat scanty amount and their irregular position would be better accounted for on the theory of their being accidental constituents. In many sections debris of one kind or another mixed with the secretion is not at all infrequent, small feathers being the most numerous. In the nest in question the alga was not present throughout, many sections showing none, others a little, the quantity varying very much. The amount found may perhaps be connected with the feeding of the birds, and result from debris of food remaining in the mouth, and so mixed up with the secretion next produced.

The nest-substance gave no micro-chemical reactions that could connect it at all with cellulose, so that it could not be formed by the partial digestion of the alga and regurgitation of the resulting matter. On the other hand, it did give very striking evidence of its close relationship with the body *mucin* described by various authors,[1] and well known as a product of the animal body. The reactions obtained with the first material used (that from the Health Exhibition) were confirmed completely by the experiments made upon the nests from Kew.

JOS. R. GREEN

Physiological Laboratory, Cambridge

NOTES

MR. ADAM SEDGWICK, M.A., Fellow and Lecturer of Trinity College, Cambridge, has been nominated by the President and Council of the Royal Society to be recommended for election by the Society on June 4, in place of the late T. R. Lewis, one of the selected candidates, who died soon after the selection was made.

SINCE our last week's note the eruption of Mount Etna has gone on increasing in violence. A correspondent of the *Standard* sends some valuable notes on the progress of the eruption. Under date Catania, May 19, 8.40 a.m., he writes :—"The eruption of Mount Etna assumed alarming proportions last evening at 5 o'clock. Earthquake shocks were felt in all the communes in the immediate vicinity of the volcano. At Zafferato, where the shocks appear to have been attended with upheaval of the soil, the disturbance is described as being so severe that the panic-stricken inhabitants fled from the neighbourhood. In the district of Bronte heavy showers of sand descended, and a gigantic column of thick black smoke was seen to emerge from the central crater of Etna towards the west." "10 a.m. An eruption has occurred near Nicolosi, to the north-west of Montegrosso, quite as severe in character as that of 1883. The lava has begun to stream down towards Nicolosi, accompanied by severe shocks of earthquake. 10.55 a.m. In addition to the eruption which has taken place in Etna itself another one occurred about 2 a.m. in Prince of Naples Mount, situated about 9 kilometres north-east of Nicolosi. This is one of the 'red' mountains, formerly volcanic, but which has hitherto been regarded as exhausted. The lava is running in two streams towards the open country. Repeated and very severe shocks of earthquake are being felt in the vicinity of Etna. 11.55 a.m. A short time ago a severe shock of earthquake of an undulating kind was felt. The eruption of Prince of Naples Mount is increasing in severity. The lava is running rapidly in a double stream towards Nicolosi, to the great danger of the town. Panic amongst the inhabitants." "Nicolosi, May 19, noon. The eruption is assuming terrific proportions. The lava has advanced over 3 kilometres in 8 hours, continuing its course steadily towards Nicolosi. From the central crater, where the eruption is still very active, the lava is flowing towards Montegrosso." "Catania, May 19, 2 p.m. The eruption threatens the destruction of the western portion of the Etna forests. Last night several volcanic rents occurred between Nicolosi and Pedara. May 20. Eleven craters have been opened, of which three have assumed enormous proportions. The lava is advancing rapidly. In some places the stream is 200 metres broad. The central crater, however, emits only vapour and cinders." "Nicolosi, May 20. Three of the craters are raging fearfully, emitting huge stones to a considerable height, and the roar and tumult is terrible. The lava is advancing rapidly, but for the present it is uncertain what direction it may take, whether towards Nicolosi or Belpasso. Shocks of earthquake still continue, but they are less severe in character. The craters are situated behind Montezzano, in the valley between that place and Montenero. The people of the district assert that they can remember no eruption so sudden and alarming as this has been. The scene is indescribable. The streams of lava are in some places more than 200 metres in width. The central crater on the summit continues to vomit large columns of smoke; but from this, according to Prof. Silvestri, no danger is to be apprehended." "Acireale, May 20. Last evening, through the night, and this morning, many shocks of earthquake were felt at Piedimonte, Acisantangelo, Linguaglossa, and Acireale." "Catania, May 20. This morning, with a severe shock of earthquake, the volcanic orifice which was so active in 1883 was reopened." "Nicolosi, May 20. The activity of the central crater is increasing. Montegrosso is the principal site of eruptive force. Great alarm exists among the inhabitants, and the houses most likely to be in danger are being evacuated. The local authorities are on the spot." On Sunday the eruption had greatly diminished, but on Monday morning it broke forth with great violence, and a fresh crater sent out a stream of lava 150 metres wide and 23 deep towards Nicolosi. On Monday evening the news was very disquieting. The violence of the eruption was then greatly increasing, and Nicolosi seemed doomed to destruction. The noise at a considerable distance is described as resembling a continuous cannonade.

---

[1] Eichwald, "Ueber das Mucin besonders der Weinbergschnecke," *Annal. Chem. Pharm.*, cxxiv. 1865, pp. 177 to 211. Obolensky, "Ueber Mucin aus der Submaxillardrüse," Pfluger's *Archiv*, vol. iv. p. 336.

At the meeting of the Paris Academy of Sciences on Monday, M. de Lesseps asked for the appointment of a committee to report on the alleged difference of sea-level on the two sides of the Isthmus of Panama. A similar objection to the Suez Canal had, he said, proved unfounded; and if the present objection were also disposed of, no locks would be necessary in the canal. On the motion of Admiral Jurien de la Gravière, who suggested that the tides might be higher on one side of the Isthmus than on the other, the question was referred to the navigation and astronomy sections. Meantime it is stated that the Technical Commission to whom M. de Lesseps had referred certain questions have affirmed unanimously that there is no insurmountable difficulty to the completion of the Canal according to the technical programme adopted by the Company—that is to say, that there will be no necessity to construct the Canal with locks, the level of the two oceans being the same.

The committee for the celebration of the centenary of Arago will issue shortly an appeal for subscriptions to erect a statue to the celebrated astronomer on the Place St. Jacques. A new boulevard will be opened in the direction of the meridian for connecting Paris and Montsouris Observatories.

A county Scientific Society for Middlesex has been constituted, to which both ladies and gentlemen are eligible. The Right Hon. Viscount Enfield, Lord-Lieutenant of the county, has consented to be the President of the Society; and the Right Hon. the Earl of Crawford and Balcarres, the Right Hon. the Earl of Aberdeen, the Right Hon. the Marquis of Ripon, Prof. T. H. Huxley, Sir John Lubbock, Prof. W. H. Flower, Sir Frederick Abel, and Dr. Archibald Geikie having intimated to the Provisional Committee their approval of the scheme and their readiness to become Vice-Presidents of the Society, were at the meeting constituting the Society elected to this office. The following gentlemen were elected members of the Council of the Society, the list to be subsequently increased:—W. Lant Carpenter, Herbert Druce, J. N. Dunning, E. Fitch, G. Griffiths, R. B. Hayward, J. Logan Lobley, Rev. Dr. C. McDowall, Wm. Simpson, Rev. Dr. F. A. Walker, Rev. J. Crane Wharton, W. Mattieu Williams. It is intended that the Society shall hold monthly meetings (evening) from about October to May, and field-meetings during the summer months. Names of ladies or gentlemen desirous of joining may be sent to the Hon. Secretary, Mr. Sydney T. Klein, Clarence Lodge, Church Road, Willesden, N.W.

The eleventh public annual meeting of the Sunday Society was held on May 22. Sir Henry E. Roscoe, M.P., F.R.S., took the chair as President for the year. Mr. Mark H. Judge read the annual statement, pointing out the progress that had been made during the year in accomplishing the objects which the Society has in view. Sir Henry Roscoe, in his Presidential Address, quoted copiously from the utterances of past Presidents and of eminent men in all departments on behalf of the opening of museums, art galleries, and similar institutions on Sunday. Having had the honour, Sir Henry said, to serve on the Royal Commission on Technical Instruction, he had had full opportunity of observing the effects of the Sunday opening of the numerous museums, industrial, artistic, and scientific, which exist in Continental countries, and he stated that after such observations the unanimous conclusion to which the Commissioners arrived was that the influence which the opening of these museums on Sunday exerted, not only upon the industrial progress of those countries, but upon the moral and intellectual condition of their peoples, had been in the highest degree satisfactory. And so forcible was the evidence on this head then brought before them, that the Commissioners placed a distinct recommendation at the close of their Report, to the effect that museums of art and science and technological collections in this country should be opened to the public on Sundays. They point out in their Report that, in respect to museums, the people of this country stand in a position of great disadvantage as compared with Continental nations, and that to the influence of these collections, as regards the direct bearing they have on art and industrial training, is due much of the abundance of art resource so advantageous to many Continental industries and manufactures. Almost all these Continental art galleries and museums are opened to the public freely on Sundays, and Sir Henry had yet to learn that opposition has been anywhere raised to this, or that any objectionable features have there been introduced. Sunday opening in the United Kingdom, so far as it has gone—and that is a long way—has had an effect the reverse of that anticipated by its opponents: museums, galleries, and libraries have been open on Sundays in thirteen towns for some years, with such success that the only opposition in those towns is one which does not show itself in public. The town of Oldham is now trying the experiment of Sunday opening for four Sundays, to-morrow being the second Sunday; and Sir Henry had a letter from the Mayor of that important northern town, stating that on last Sunday crowds of well-behaved persons passed through the gallery, and that he is satisfied of the importance and good influence of the movement. Sir Henry concluded:—"We challenge the Sabbatarian party to be true to their own opinions, as we are to ours. We ask for more of what we say has been a blessing. They refuse their assent on the plea that Sunday opening *per se* is a curse. They show by their actions that they are only half believers in their own statements. We challenge them to take a vote on the direct question as to whether those museums and galleries now open should remain open or not." The meeting authorised the Committee of the Society to send a memorial to H.R.H. the Prince of Wales, requesting that in the interest of the community the Colonial and Indian Exhibition should be opened on a few Sundays by free tickets.

MR. EDGAR CROOKSHANK writes, with reference to our article on the Royal Society *soirée* last week, to say that by a slip the exhibition of micro-photographs and preparations of Bacteria were assigned to his friend Mr. Cheshire. The collection of photographs was exhibited by request, and represent many months' work in endeavouring to overcome the difficulties of obtaining satisfactory results with the use of high powers (1-25th, 1-18th, and 1-12th, o.i.). In many cases of preparations of Bacteria, such as *cover-glass preparations*, and especially the so-called *impression-preparations*, and particularly where there is much detail, Mr. Crookshank maintains that photography is the only satisfactory means for obtaining an accurate picture. In such cases photography excels in affording us absolute faithfulness.

THE hybrid trout reared at the South Kensington Aquarium from the ova of the sea-trout, *S. trutta*, impregnated with the milt of the common trout, *S. fario*, in December last, show unmistakable signs of hardihood. Comment has been made previously in this journal upon the subject, as the facts adduced evidence the capacity of Salmonidæ to give ova without descending to the sea. There has been a much less percentage of mortality not only amongst the ova but the fry. At the present time they are located in a special pond at the Delaford Park Fishery belonging to the National Fish Culture Association, where they continue to thrive exceedingly well. They were encouraged to feed after losing their sac sooner than other species of fry; and without exception are growing rapidly.

ON Saturday last 12,000 Severn salmon fry were turned into the River Dee. The ova were spawned by the Severn Fishery Board, and hatched out by the National Fish Culture Association. A large number of the same species will be deposited this week in the Severn, having been reared at South Kensington for this purpose.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus rhesus*) from India, presented by Capt. Boyle; two Squirrel Monkeys (*Chrysothrix sciurea*) from Brazil, presented by Mr. George Liddell; a Pig-tailed Monkey (*Macacus nemestrinus*) from Java, presented by Mrs. F. E. A. Prince; three Speckled Terrapins (*Clemmys guttata*), seven Painted Terrapins (*Clemmys picta*), a Sculptured Terrapin (*Clemmys insculpta*), eleven Striped Snakes (*Tropidonotus sirtalis*), three Ribbon Snakes (*Tropidonotus saurita*), seven Dekays Snakes (*Ischnognathus dekayi*), four Grass Snakes (*Cyclophis vernalis*) from North America, presented by Mr. Samuel Garman, C.M.Z.S.; three Spanish Terrapins (*Clemmys leprosa*), European, presented by Mr. Cuthbert Johnson; a Quail (*Coturnix communis*), European, presented by Mr. Kenneth Lawson; four Menobranchs (*Menobranchus lateralis*) from North America, presented by Prof. Ramsay Wright; two Wild Ducks (*Anas boschas*), British, presented by Mr. G. Edison; a Common Viper (*Vipera berus*), British, presented by Mr. Percy E. Coombe; a Macaque Monkey (*Macacus cynomolgus*) from India, deposited; two Spotted Hyænas (*Hyæna crocuta*) from South Africa, two Ruffs (*Machetes pugnax*), three Viperine Snakes (*Tropidonotus viperinus*), European, two Lion Marmosets (*Midas rosalia*), a Spotted Cavy (*Cœlogenys paca*), two Ariel Toucans (*Ramphastos ariel*), two Crested Curassows (*Crax alector*), a Zenaida Dove (*Zenaida amabilis*) from Brazil, purchased; four Bernicle Geese (*Bernicla leucopsis*), European, received in exchange; a Gayal (*Bibos frontalis*), an African Wild Ass (*Equus tæniopus*), a Japanese Deer (*Cervus sika*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

THE HELIOMETER OF THE YALE COLLEGE OBSERVATORY.—From Dr. Elkin's report of the work done during the year ending June 1, 1885, we learn that the principal object of research has been the triangulation of the Pleiades, to which work the heliometer was devoted from September 1884 to March 1885. It was originally intended to confine the investigation to the stars measured at Königsberg and to carry out only one method of triangulation. The scheme has been extended, however, to include all the stars in the Bonn *Durchmusterung*, within certain limits, down to magnitude 9·2, making sixty-nine stars in all, and also to obtain a determination of the relative positions of the stars which should be strictly comparable with the Königsberg work, viz. measurement of distances and angles of position of the stars from Alcyone. The observations have all been reduced provisionally; the final reduction cannot be undertaken until the results of the meridian observations of the end stars of two zones serving to determine the scale value and zero of position have been received from the observatories which have consented to make them. Measures of the moon from neighbouring stars have also been made on thirty-six nights near the first and last quarters, and the diameter of the moon has been measured at opposition on seven occasions. Observations have also been made of the diameter of Venus, the outer ring of Saturn, and of Titan referred to its primary. It is now proposed to devote the heliometer to systematic investigations in stellar parallax, and, judging from the results which have been obtained by Gill and Elkin at the Cape, we may expect that most valuable work will be done in this direction with the heliometer at Yale College also.

ECLIPSE OF JUPITER'S FOURTH SATELLITE.—Mr. Marth pointed out some two years ago, in a paper read before the Royal Astronomical Society (*Monthly Notices*, vol. xliv. p. 241), the importance of observing those eclipses of the fourth satellite of Jupiter which commence or end a series, in order to obtain data for correcting the tables. A slight error in latitude shows itself very strikingly on such occasions in the duration of the eclipse. Such observations are unfortunately very rare, the Greenwich eclipse observations from 1836 to 1883 not affording a single instance of an observation which will assist in correcting the latitude. Mr. John Tebbutt, Windsor, New South Wales, noticing that two of the last eclipses of the cycle just closed were visible in New South Wales, drew attention to these facts in the *Sydney Morning Herald* for March 27. We learn from a communication in the number for April 1 of the same paper that Mr. Tebbutt was successful in his own observations of the phenomenon. The disappearance of the satellite took place at 14h. 38m. 34s. Windsor mean time, or 15m. 43s. *before* the time given in the *Nautical Almanac*. The reappearance, on the contrary, was 8m. 55s. *late*, the duration thus being 24½m. longer than the predicted time. Mr. Russell, at Sydney, noted that the satellite had already disappeared when he began to observe, quite six minutes before Mr. Tebbutt lost sight of it. Mr. Tebbutt was convinced, however, of the accuracy of his now observation.

A NEW COMET.—Mr. W. H. Brooks, Red House Observatory, Phelps, New York, discovered a bright comet on May 23, 15h. Greenwich mean time. Its position was as follows:—R.A. 11h. 55m., Decl. 8° 55′ N.